

A NEW SPECIES OF *PEDIوبيUS* WALKER
(HYMENOPTERA: EULOPHIDAE), ASSOCIATED WITH
TETTIGONIID EGGS

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Abstract.—*Pediobius smithi* Ahlstrom, n. sp., is described from *Scudderia* eggs (Orthoptera: Tettigoniidae) on grapefruit leaves from Merritt Island, Florida. This is believed to be the first record of *Pediobius* parasitizing tettigoniids.

Key Words: Insecta, *Pediobius*, Eulophidae, tettigoniid eggs, *Scudderia*

The genus *Pediobius* was first proposed by Walker (1846). Graham (1959, 1963) reviewed and furnished a key to British material; Thomson (1878) treated species from Scandinavia. Bouček (1965) made an extensive revision of the Palearctic species and included a key to 32 species. This information was supplemented by Bouček and Askew (1968) and Bouček (1974). Early study of Japanese species was performed by Crawford (1910); Kamijo (1977, 1979, 1986) has studied and keyed species from Japan and Korea. Species from the Australasian Region have recently been evaluated by Bouček (1988). Kahn and Shafee (1982) recorded the species from India and furnished a key to the Indian species. Species from tropical and subtropical areas have been reviewed by Kerrich (1973). North American species of *Pediobius* have been reviewed by Burks (1966), and a comprehensive study of Nearctic species has recently been completed by Peck (1985). Both Burks (1966) and Peck (1985) included keys to species. This article describes a new species and compares it with related species. The senior author (K.R.A.) is solely responsible for the description.

On 19 February, 1991, a "White March" grapefruit tree sapling was collected at Merritt Island, Brevard County, Florida, and delivered to James W. Smith, Senior Entomologist at Rhône-Poulenc Ag Company in Research Triangle Park, North Carolina. Shortly after arrival, some tettigoniid nymphs were observed on the foliage of the tree. Closer examination revealed a series of eggs on the margin of two leaves, which were removed and placed in a fine mesh cage. Quite soon after placement in the cage, J.W.S. noticed several small, gregarious, hymenopterous parasites emerging from some of the unhatched eggs. Approximately fifteen minutes after the onset of parasite emergence, a total of 31 specimens had emerged from eight eggs. The parasites, along with the tettigoniid nymphs and the leaves were collected, and placed in 80% ethanol and given to K.R.A., who identified the first instar nymphs as belonging to the genus *Scudderia* Stål 1873 (Orthoptera: Tettigoniidae). Because the parasites did not appear like others recovered from *Scudderia* or from other tettigoniid eggs, a few were sent to Michael E. Schauff at the Systematic Entomology Laboratory in Washington,

D.C., who determined them to be specimens of an undescribed species of the entedontine genus *Pediobius* Walker.

***Pediobius smithi* Ahlstrom,
NEW SPECIES**

Diagnosis.—This species is recognizable by the unique sculpturing on the scutellum, the reticulate vertex, the submedian carinae of propodeum parallel to slightly divergent posteriorly, and the coloration of the tarsi.

Female: Length 1.8 mm. Head and thorax (including scutellum) shining metallic green with brassy overtones; propodeum and basal 0.67 of gastral tergum I metallic green and blue-green; petiole faintly metallic green; remainder of gaster shiny black; antennae and legs (except tarsi) black with green metallic sheen visible on coxae, femora, and tibiae; basal 3 segments of the tarsi white, apical segment dark brown; wings hyaline, veins brown.

Frons sculptured above and below transverse groove, sculpturing above groove and on vertex equally strong; ocellocular line $0.5 \times$ the length of lateral ocellus; distance between lateral ocellus and occipital ridge equal to length of lateral ocellus (Fig. 1); dorsal width of compound eye $0.75 \times$ interocular width at anterior ocellus. Relative lengths (*sensu* Burks 1966) of antennomeres—scape, 20; pedicel, 8; funicular segment I, 11; II, 9; III, 7; club, 13.

Pronotum with 6 dorsal bristles; mesoscutum, including foveae, with strong, reticulate sculpturing (Fig. 2). Scutellum flattened, with reticulate sculpturing which gradually diverges apically, median area of apex glabrous (Fig. 3). Postnotum depressed with a pair of deep, transverse pits on propodeum just behind postnotum. Propodeum glabrous except extreme apex somewhat rugulose; median carinae of propodeum slightly divergent from base to apex, lateral carinae straight, divergent (Fig. 4). Forewing with marginal vein $8 \times$ as long as stigmal vein, postmarginal vein and stigmal vein equal in length (Fig. 5).

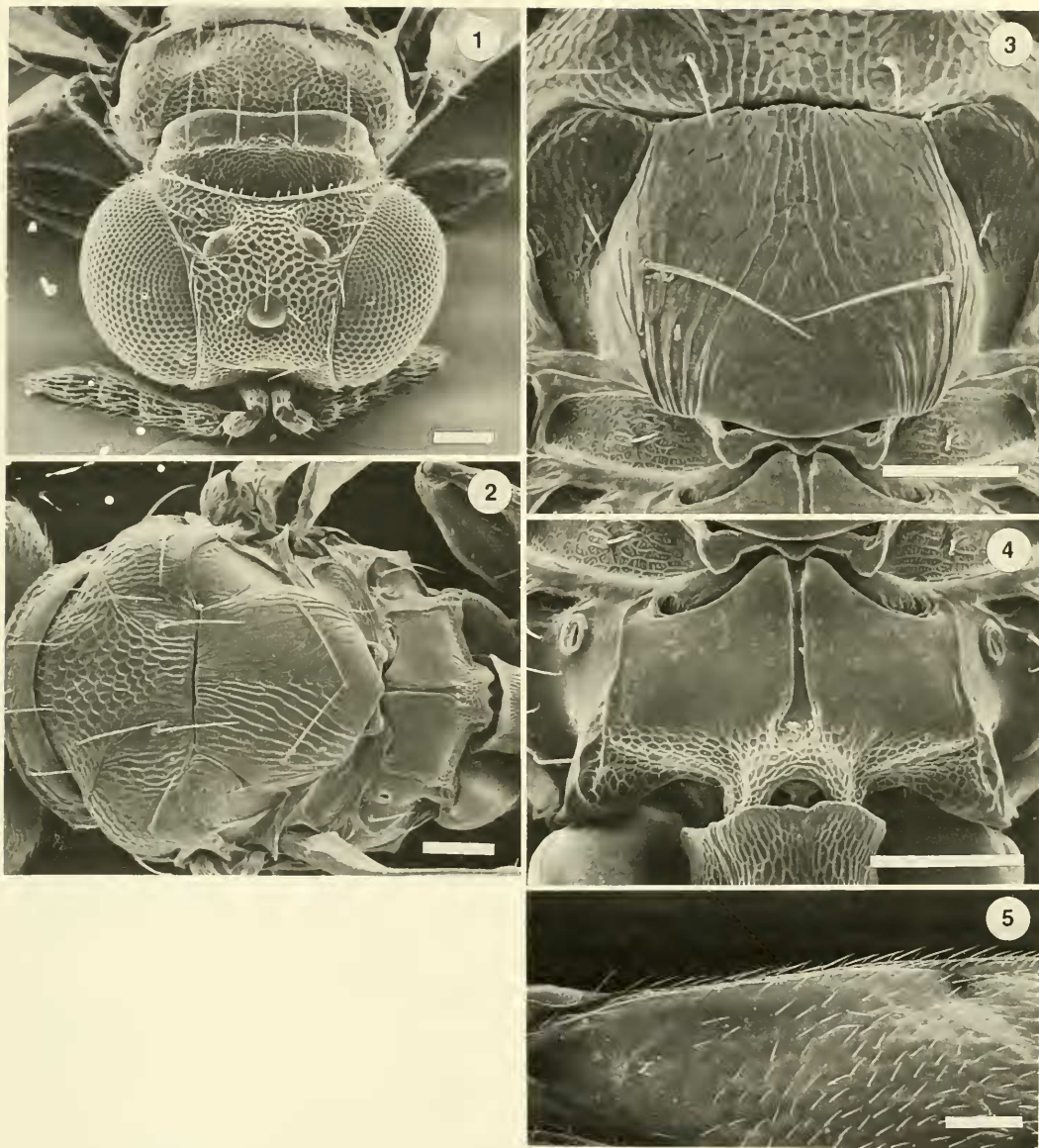
Petiole slightly longer than broad. Gaster $1.125 \times$ longer than thorax and propodeum; tergum I is $>0.5 \times$ the length of the gaster, anterior 0.67 glabrous, posterior 0.33 and remaining 6 terga slightly scabriculous.

Male: Length 1.4 mm. Frons bright metallic green, vertex brassy; entire thorax including propodeum, antennae and legs (except tarsi) brassy green; tarsi as in female; basal 0.5 of gastral tergum I bright metallic green, apical 0.5 black, remaining terga brassy.

Antenna with 3 funicular segments; relative lengths of antennomeres—scape, 15; pedicel, 8; funicular segment I, 10; II, 9; III, 10; club, 12. Structure and sculpturing as in female; gaster shorter than thorax and propodeum (posterior terga slightly telescoped beneath tergum I).

The descriptions above are based on one female which has been designated as the holotype, and one representative male. All of the female specimens varied slightly in overall length, ranging from 1.7 to 1.9 mm. Coloration and sculpturing of the specimens was fairly uniform, differing only in slight variations in intensity of the base color and clarity of the reticulate sculpturing on the scutellum. Tarsal coloration was as described except that the basal segment of the hind tarsi on two females was more of a dirty white rather than the bright white seen in all other specimens. Males ranged in length from 1.4 to 1.5 mm and tarsal coloration was uniform among all specimens. Otherwise, slight differences were similar to those found in the females.

Material examined.—Holotype ♀, and 25 ♀ and 5 ♂ paratypes, Merritt Island, Florida, Brevard Co., Florida, 1 March 1991, reared from eggs of *Scudderia* sp. by J. W. Smith. Holotype ♀ to be deposited in the National Museum of Natural History (NMNH), Washington, D.C. Paratypes: 10 ♀♀ and 2 ♂♂ to be deposited in the (NMNH); 10 ♀♀ and 2 ♂♂ to be deposited in the North Carolina Department of Agriculture C. S. Brimley Memorial Insect Collection, Raleigh; and 5 ♀♀ and 1 ♂ to be deposited in the North



Figs. 1–5. *Pediobius smithi* Ahlstrom, n. sp. 1, Head (dorsal view). 2, Mesothorax (dorsal view). 3, Scutellum. 4, Propodeum. 5, Forewing. Scale line = 0.1 mm.

Carolina State University Insect Collection, Raleigh.

Discussion.—This species runs to *pseudotsugatae* in couplet 17 of Peck's (1985) key based on similarity of sculpturing on the scutellum, but differs from *pseudotsugatae* because of the coloration of the tarsi which appear like those of *williamsoni* (Girault 1911). In Burks' (1966) key, this spe-

cies runs to *lonchaeae* Burks 1966 in couplet 6 where it differs by having a sculptured vertex and slightly diverging submedian carinae on the propodeum. Using Peck's (1985) key, *smithi* would key out as follows:

- 16(15). Vertex laterally smooth. Propodeum with submedian carinae strongly divergent posteriorly *lonchaeae* Burks (p. 669)
Vertex entirely, densely reticulate. Pro-

- podeum with submedian carinae parallel or slightly divergent 17
- 17(16). Scutellum anterolaterally with parallel striae forming 2 convergent stripes; medially and posteriorly smooth (Fig. 20) 17a
- Scutellum with basal two-thirds longitudinally striate; apex smooth (Fig. 18). Tarsi pale, apical segment dark
 *williamsoni* (Girault) (p. 670)
- 17a(17). Tarsi brown .. *pseudotsugatae* Peck (p. 669)
- Tarsi pale, apical segment dark
 *smithi*, n. sp.

Biological relationships.—The genus *Pediobius* contains species which are primary or secondary parasites of Arachnida, Coleoptera, Diptera, Hymenoptera, Lepidoptera, and very rarely Orthoptera. Most species are solitary; a few, however, exhibit a gregarious behavior. Host-parasite relationships outside of the Nearctic Region have been cataloged by several authors (Bouček 1965, 1988, Bouček and Askew 1968, Kahn and Shafee 1982, Kamijo 1977, Kerrich 1973). Of all the hosts identified by the authors above, only Kerrich (1973) records two species of *Pediobius* parasitizing egg masses of mantids. Host-parasite relationships for the Nearctic Region have been cataloged by Burks (1966, 1979) and Peck (1963, 1985). This is the first reported occurrence of a species of *Pediobius* being reared from tettigoniid eggs.

Etymology.—The species is named in honor of Dr. James W. Smith, who collected the species.

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